

5 **WHAT IS CLAIMED IS:**

1. A method for optimizing the image quality of movable subjects imaged with a microscope system, comprising the following steps:
  - 10 a) acquiring a plurality of images having a plurality of pixels;
  - b) determining a respective displacement vector field from a comparison of the pixels of each two chronologically successive images;
  - c) identifying a trajectory for each pixel of the image from the displacement vector fields; and
  - d) applying an operation to the image data along a trajectory.
- 15 2. The method as defined in Claim 1, wherein the operation along the identified trajectory is a deconvolution, a smoothing, an averaging filter, or any operation acting in time-lateral fashion.
- 20 3. The method as defined in Claim 1, wherein the plurality of acquired images are conveyed to an image memory; and parallel therewith, data from the plurality of acquired images are conveyed to an optical flow calculator and to a trajectory tracker and to a trajectory memory.
- 25 4. The method as defined in Claim 3, wherein for the application of a filter, data of the acquired images can be retrieved from the image memory, and corresponding data can be retrieved from the trajectory memory, and can be correlated.
- 30 5. The method as defined in Claim 4, wherein the data generated by application of the filter can be conveyed to a second image memory.
6. The method as defined in Claim 1, wherein the microscope system contains a scanning microscope or a conventional microscope.

- 5      7. An arrangement for optimizing the image quality of movable subjects imaged with a microscope system, the microscope system comprising: at least one objective defining an image window, a detector unit for acquiring a plurality of images each having a plurality of pixels, a computer system, which encompasses a means for determining a respective displacement
- 10     10. vector field from a comparison of the respective pixels of at least two chronologically successive images, a means for identifying a trajectory for each pixel of the image from the displacement vector fields, and a means for applying an operation to the image data along a trajectory.
- 15     8. The arrangement as defined in Claim 7, wherein the means for applying an operation to the image data along a trajectory encompasses a deconvolution means, a smoothing means, or an averaging filter, or any operation operating in time-space fashion.
- 20     9. The arrangement as defined in Claim 7, wherein a first image memory is provided which stores the data of the plurality of acquired images; and a second image memory is provided which stores the data created by the correlation of the data from the first image memory with the data from a trajectory memory.
- 25     10. The arrangement as defined in Claim 7, wherein the microscope system encompasses a scanning microscope or a conventional microscope.
- 30     11. Software on a data medium, wherein the software causes a microscope system to carry out a method as defined in one of Claims 1 through 6.